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Tribal Science and Farmers' Resistance: A Political Ecology of Salmon Habitat Restoration in the American Northwest

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ABSTRACT

In the northwest corner of the US, commercial farmers defend their place-based heritage against the scientific and regulatory strategies of local Native American tribes seeking to restore salmon habitat in agricultural areas. The apparent irony of this scenario stems from a set of unique circumstances in the American Northwest that complicates dominant narratives and allegiances in political ecology and related fields. Ethnographic and historical evidence shows how a century of tribal activism to regain treaty fishing rights, and now to restore fish habitat, has collided with new forms of activism among county-supported farmers, whose counter-discourses depict themselves as stewards of the land. This case represents an exception to the more commonly observed pattern in which Western science and state power threaten to erode indigenous culture. It nevertheless suggests that the instrumentalist approach to salmon habitat restoration in Washington state, on the part of tribal and non-tribal entities alike, constrains ecosystem recovery by preventing a sophisticated understanding

of its complex social and cultural dimensions. A detailed understanding of the histories and place-based identities that motivate the political engagement of both tribal and agricultural communities could inform more socially effective strategies for achieving actual habitat restoration goals. [Keywords: Environmental conflict, science studies, place-making, agriculture, Native Americans]

Introduction: An Unusual Scenario

In the Skagit River Valley of Washington state, in the northwest corner of the US, farmers are resisting efforts by environmental advocates to convert portions of their land into salmon habitat. They complain that the people behind these efforts are urban outsiders who have learned about the environment through television and books and are attempting to impose a romantic vision of nature onto a working landscape. They express outrage that the scientific knowledge produced in support of restoration is based on abstract and anti-farming assumptions, has not been produced through a transparent and democratic process, and does not factor in the social and economic requirements for maintaining the local agricultural industry. Farmers argue that the resulting restoration projects will not achieve their intended goals anyway since they do not account for ecological processes, such as invasive species and local drainage and flooding patterns, which farmers observe in their own daily experiences of the landscape. Finally, these farmers charge restoration advocates with not respecting the historical and cultural relationships that multi-generational residents have developed with the land or the independence with which they have been stewarding it for more than a century. As a result, some farmers conclude that habitat restoration has little to do with recovering salmon and more to do with governmental and urban elites attempting to control the water, land, and people of the region (Breslow 2001, 2011).

So far, this scenario resonates closely with "First World" political ecologist James McCarthy's description of the American Wise Use¹ movement, whose members resist the "interventions of distant, highly bureaucratic, and professionalized environmental groups," publicly "proclaim their superior knowledge and understanding of local environments, assert the historical precedence and legitimacy of their uses," and "suggest that conservation is merely a cover for increased state control and the assertion

of class privilege in the region" (2002:1281). Indeed, the parallels between what McCarthy and I observed among rural residents of the American West suggest that we are witnessing a similar phenomenon, and that Skagit farmers are themselves influenced by the Wise Use philosophy. Based on his study of the Wise Use movement, McCarthy (2002) makes a compelling case for why the general explanatory framework of political ecology, an approach developed for the "Third World," also applies to the "First World." As he explains, a narrative in which local, marginalized rural resource users resist the interventions of scientific experts, governmental agencies, and transnational environmental organizations is reproduced repeatedly in political ecology case studies from the developing world (e.g., Neumann 1991, Peluso 1993, Zerner 2000). He points out that such a narrative also appears to apply surprisingly well to his Wise Use case—as it seems to with the Skagit case. As McCarthy (2002) argues, political ecology scholars had not previously applied the same analysis to rural resource users in the American West and other "advanced capitalist" societies for two main reasons: 1) these potential research subjects did not appeal to academics' "*political sympathies*" (2002:1298; emphasis in original), and 2) the related literature reproduces "enduring myths" that Westerners have primarily aesthetic, modernist, rational, individualistic, and capitalistic relationships with nature (2002:1298), in contrast to those of Third World resource users, typically characterized as livelihood- and place-based, historical, cultural, and marginalized. On the contrary, McCarthy demonstrates that despite the obvious difference in wealth, the place-based members of Wise Use fit the role of marginalized rural resource users in the dominant political ecology narrative given their analogous circumstances, opponents, and strategies of resistance.

It would be tempting to also apply such an explanatory narrative to Skagit Valley farmers, except for one major difference: several of the most influential environmental advocates in the Skagit case work for two local Native American tribes (the Sauk-Suiattle Indian Tribe, located in the mountains, and the much larger and politically dominant Swinomish Indian Tribal Community, located on the saltwater). The tribes' ultimate goal is to restore salmon habitat in order to restore harvestable runs of salmon that will, in turn, help revitalize their subsistence and commercial fisheries and related cultural traditions. These major aims and the persistence with which they pursue them reflect the Native "heart" behind salmon habitat restoration in the valley (see Tomblin 2009:194, quoting the Indigenous

Peoples' Restoration Network). Yet beyond the Native leaders who direct overall management agendas, many western Washington tribes hire predominantly non-Native scientists, as well as attorneys, to achieve their habitat restoration and fish recovery goals. These non-Native scientists (who are nevertheless referred to as "tribal scientists" in common parlance, which creates its own confusion) conduct research and implement restoration plans according to the principles of conventional, Western science. The local Skagit tribal research center is widely respected by regional salmon recovery advocates, and its results inform not only tribal restoration projects, but also those of governmental agencies and local to international environmental organizations. Yet despite expressing general appreciation for an indigenous philosophy—and in some cases identifying it as a motivating factor to work on behalf of tribal interests (e.g., Beamer 2009)—the tribal scientists' research does not reflect a divergence from conventional science nor a commitment to indigenous or participatory research principles, such as engaging directly with the parties it would most affect, namely tribal fishermen and farmers.

In addition, the Swinomish Tribe, working with environmental groups, attempted to impose a regulatory requirement for habitat restoration on farmland by pursuing a 12-year legal argument founded largely on the state's definition of "best available science." For the purpose of the state code, "science" was drafted to mean hypothetico-deductive natural science to the exclusion of "legal, social, cultural, economic, and political information" (Copsey 1999).² In legal briefs, the tribe and its supporters repeatedly argued that the county's salmon habitat protection proposals were not based on the "best available science" that details the salmon's ecological need for wide, forested streamside buffers (Bolton and Shellberg 2001, Knutson and Naef 1997).³ In protest, the county attempted to defend the agricultural community with a more expansive interpretation of "science" that included farmers' local knowledge not only about the biophysical properties of the agricultural landscape, but also about the social and economic dynamics of the agricultural community.⁴ In other words, the county's definition of "science," at least in the context of this court case and despite its exclusive focus on agricultural concerns, was much more inclusive of the principles of environmental *social* science than was the tribe's definition.

Thus, the presence of Native American tribes in the Skagit case, and the narrow pursuit of a scientific and legal strategy on the part of the

Swinomish Tribe, in contrast to that of county-supported farmers, radically problematizes what is otherwise a recognizable political ecology scenario taking place in the “First World.” In other words, although Skagit farmers resist the interventions of professional environmental elites, these elites are not necessarily *distant* professionals working for outside organizations—rather, many of them work for another major resource-based community in the valley, which many would argue is more local than the farmers, namely, Native Americans. And these indigenous groups are, arguably, no longer resisting the interventions of a technocratic bureaucracy, but have rather learned how to wield it for their own ends. Nevertheless, an ethnographic study of how the major themes of political ecology are expressed locally, as McCarthy recommends, is still invaluable in making sense of the contested politics of habitat restoration in the Skagit Valley. Indeed, the conflict has everything to do with the colonial legacy, marginality and disenfranchisement, access to resources, resource-based livelihoods, place-based identities, effects of market integration and globalization, and state decentralization, among other factors, which constitute the central concerns of the field (McCarthy 2002:1283). Yet the Skagit case does not easily conform to the recurrent explanatory narrative of political ecology in which local people and local knowledge, on the one hand, are pitted against scientific, state, and market forces on the other. In resisting this dichotomous narrative, the case raises multiple questions.

In the Skagit Valley, a largely Euro-American community of farmers make arguments in defense of their place-based knowledge and heritage while opposing the scientific and regulatory interventions of local Native American tribes. Why is it that this situation strikes an ironic tone? Its discordance stems most simply from the possibility that it represents a relatively novel set of circumstances in the American Northwest colliding with persistent tropes and allegiances in political ecology. How is it, we might ask, that relatively wealthy commercial farmers, most the descendants of colonial settlers or more recent immigrants, can make any claim to marginality and a place-based heritage in the American West? This is similar to the question that McCarthy (2002) poses, and answers, in his study of *Wise Use*. But in the Skagit case, this question becomes even stranger: how is it that a largely Euro-American community of farmers can claim localism, if not a form of indigenism (Dombrowski 2002, Hodgson 2002), when their major opponents are Native American tribes? And why is it that the actual indigenous people in the valley make resource claims

less by invoking their indigenous identity than by leveraging Western science and the regulatory arm of the state—forms of power conventionally viewed as antagonistic to indigenous culture?⁵ If it is the indigenous group producing the majority of the scientific knowledge underpinning environmental objectives, why does that knowledge not represent an integration of Western science and traditional ecological knowledge (TEK), a consideration of the larger socio-cultural context, or a willingness to employ participatory approaches? Why do the farmers persistently construct themselves in opposition to urban environmentalists, even when it is the local tribes who are pursuing the most aggressive strategies for habitat restoration? Is the indigenous group still in a position of resistance in this case? Are the farmers now resisting? Who is resisting whom? Who is resisting what? And why?

I cannot do justice to all of these questions in this short article, but in raising them I reach several preliminary conclusions. First, the growing political strength of Native American tribes in western Washington state is shifting relationships of power such that persistent hierarchies stemming from the colonial relationship are becoming less clear (see Cronin and Ostergren 2007). Furthermore, relationships between indigenous people, rural resource users, the state, Western science, and environmental organizations are shifting in ways that the predominant narrative of political ecology does not necessarily predict. Specifically, the Skagit case represents an instance in which a traditionally oppressed group appears to be succeeding in its resistance, not by resisting the influence of science-based conservation and state power, but rather by strategically using them as tools for cultural revitalization, economic development, and political sovereignty.

Second, that western Washington tribes can and do rely on the tools of natural science and the law to achieve their need for fish recovery reproduces the persistent dominance of these approaches in environmental problem-solving, while reflecting the tribes' increasingly conventional role in environmental management. Despite scholars' visions for an environmental science that is more inclusive of social considerations, more indigenous, or more democratic (see, e.g., Escobar 1996, Peet and Watts 1996, Smith 1999, Fortmann 2008), the Skagit case cautions against assuming that the eventual empowerment of a marginalized, indigenous, place-based group will itself necessarily effect these changes. Instead, as critical political ecologist Tim Forsyth notes, "Environmental social movements

may...not necessarily lead to a radical reframing of environmental discourses, but instead may co-opt and replicate existing narratives in order to increase their political power” (2003:164). Furthermore, as Forsyth argues, drawing on Agrawal (1995), the persistent association of indigenous groups with indigenous knowledge and marginality presumes and reinscribes their subaltern status, and may “help to reiterate” a local-global hierarchy (2003:187). Instead, like the more high-profile Makah whalers who engaged transnational agreements and federal science and law against animal rights protests, Skagit tribes scramble the local-global dualism by deliberately employing strategies commonly associated with globalization in order to protect a local and traditional way of life (see Martello 2004).⁶

Third, that the farmers in this case persist in constructing themselves in opposition to environmental scientists rather than tribal leaders reflects the tenacity of a long-standing polarization between American rural resource users and environmental and managerial professionals dating to the turn of the 19th century (Hays 1959). It also reflects an apparent unwillingness on the part of these rural landowners to recognize the agency and growing political power of their Native American neighbors.

In these ways, the Skagit case represents an exception to the numerous case studies in the related literature that document persistently stark inequities and dichotomies between indigenous and other place-based people, and the homogenizing influences of Western science, the state, and transnational environmentalism.

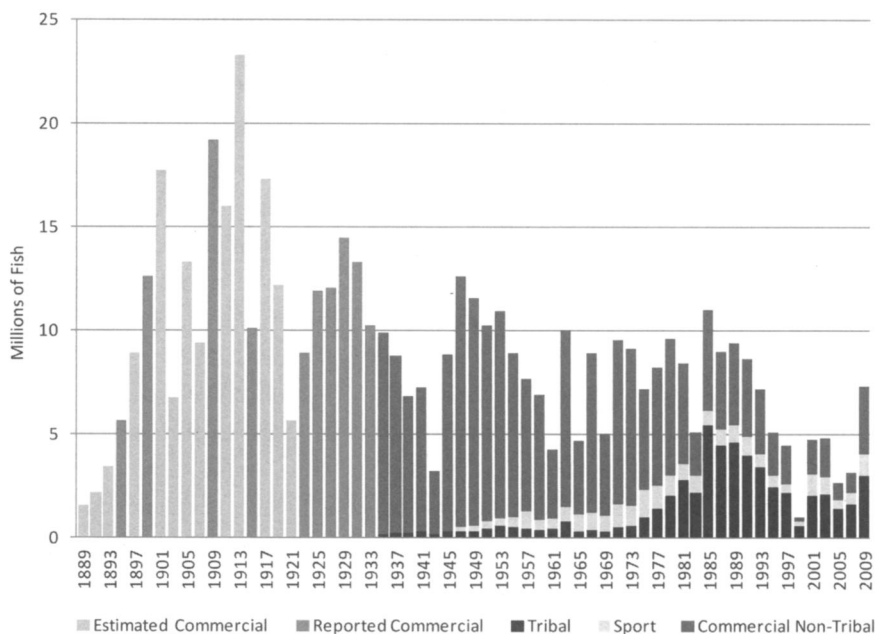
These questions and analytical themes all emerged from a broader study of the cultural factors underlying the ongoing conflict surrounding efforts to restore salmon habitat on farmland in the Skagit Valley. Ethnographic research was conducted for more than two cumulative years between 2001 and 2011, with the most intensive fieldwork taking place between 2004 and 2006. Methods consisted of semi-structured interviews with over 150 farmers, Native Americans, restoration advocates and other valley residents, and participant observation at dozens of meetings and events. In addition, an historical understanding of the region’s major natural resource issues, compiled from published histories and archival material, was essential for making sense of the contemporary conflict, as evidenced below.

Tribal Activism: Restoring the Right to Fish

Until 1974, the relationship between Native American fishermen of western Washington and science-based state conservation policies fit the more common pattern: tribal communities had little access to state power, and since Euro-American settlement they were systematically restricted from their traditional livelihoods in the name of assimilation and conservation, with traumatic consequences. Once colonists settled the western Washington area in the late 1800s, it took only about 50 years to transform the largely forested, marshy landscape into one that supported international trade in timber, minerals, and agricultural crops, and produced enough hydroelectric power to meet about a quarter of the city of Seattle's electricity needs. The logging of upland forests, clearing of lowland forests for settlement, draining and diking of marshes and waterways for agriculture, and damming of the river for energy took a major toll on the ten varieties of salmonids⁷ and other fish and wildlife species that rely on the valley's riverine and estuarine habitats. Approximately 90 percent of the valley's original wetland and estuarine habitat was lost since settlement (Beamer et al. 2005). In addition, the development of a major industrial salmon fishery in the 1890s further decimated local runs. Given the massive transformation of the region's river basins and nearly unregulated industrial harvest, the western Washington commercial salmon fishery peaked early, in 1913, with Puget Sound canneries packing a record 2.6 million cases of 48 one-pound cans (Boxberger 1989). Records show that Washington's salmon harvests began a long albeit stochastic decline over the course of the next century (Figure 1).

With the start of industrial fishing in the late 1800s, Native Americans began to work as commercial fishermen and cannery laborers as obvious ways to enter the new market economy, despite efforts by Indian agents to make them into farmers. However, Native and other non-white residents were soon forced out of the commercial fishery through territorial, physical, and economic competition from white fishermen, a constituency supported by state policies favoring expensive commercial ocean fishing gear over river and near-shore gear. Tribal fishermen were furthermore restricted from even traditional fishing under the guise of conservation, a discriminatory logic made popular by the fact that tribal river fishing was visible and easily scapegoated by non-Native residents. By the 1930s, state officials were harassing and even arresting tribal members who were fishing for

Figure 1: Washington state salmon harvests by user group in numbers of fish, 1889-2009.⁸



subsistence on reservations, and poverty and destitution became noticeable among local Native communities (Boxberger 1989).

Meanwhile, beginning as early as 1887, Native American tribes in Washington state turned to the courts in an effort to reclaim their access to the fishery. Their case rested on treaties signed with the US government in 1855, which in exchange for the vast majority of the land in Washington Territory stipulated that, “[t]he right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory.”⁹ Decades of legal battles pitted Washington state’s property and commercial fishing interests against the US federal government’s responsibility to uphold treaties and protect Native American tribes. Propelled by mounting political activism of the 1960s, the tribes’ case culminated in an outstanding legal victory in 1974, upheld by the US Supreme Court, known as the Boldt Decision.¹⁰ Federal district court Judge George Boldt determined that the treaty phrase “in common with” meant that federally recognized tribes had reserved by treaty the right to harvest up to 50 percent of the state’s harvestable fish. With the

Boldt Decision, western Washington Native American tribes became official co-managers of the state's fisheries, and tribal harvests increased dramatically until they were approximately half of the total catch (Figure 1). The ruling in *U.S. v. Washington* was "one of the most controversial legal rulings in the history of the region" (Lombard 2006:301), and it set a precedent for indigenous rights worldwide (e.g., see Ichikawa 2001).

The trouble was that by 1974 salmon runs were only a fraction of what they had been when the legal battle started, let alone at the time of the treaties. By 1999, the runs had dropped so low that several stocks of Puget Sound salmon were listed as threatened under the US Endangered Species Act (ESA). Hence, the question for the tribes now was whether the treaty protected not only the right to harvest half of the salmon, but even the right to harvest salmon at all—or, in other words, the right to protect the fish and their habitat from destruction. In 1985, the US Ninth Circuit Court determined that this question would only be settled with the "concrete facts" of a particular case. Western Washington tribes eventually found such a test case: the thousands of culverts built under state roads, which block access to more than 3,000 miles of habitat, with the potential to produce an estimated 200,000 additional adult salmon (Blumm and Steadman 2010). In 2007, federal court Judge Ricardo S. Martinez ruled in favor of the tribes on the culvert case, writing that, "it was...the right to *take* fish, not just the right to fish, that was secured by the treaties."¹¹ With this ruling, western Washington tribes held the state accountable for culvert repairs that would cost hundreds of millions of dollars, just as the global economy slid into a major recession. With the state unwilling to meet this order, negotiations stalled in October 2009, sending both parties back to court.

The rulings on the culvert case so far indicate that Washington state will be required under federal law to protect sufficient runs of salmon to allow treaty tribes to attain a modest living by fishing in their traditional places. (Note that due to the Boldt Decision this means that non-Native state fishermen would have the treaties to thank for ensuring the existence of their half of the resource as well.) Given the wide-ranging habitat needs of salmon—from open ocean to mountain streams—and all intervening land uses and jurisdictions, the environmental protection required by the treaty right to harvest fish could necessitate major changes in how land and water are managed and regulated in the state. At this point, Martinez's ruling stops just short of making salmon habitat protection and restoration

an explicit treaty requirement—a significant limitation noted by tribal as well as state officials. However with its implication for habitat protection, the treaty fishing right potentially constitutes the most powerful legal tool available to protect salmon in this region—even more powerful than the US Endangered Species Act, because the treaty right would apply to all, and not only federal, jurisdictions (Blumm and Steadman 2010, Lombard 2006). In this way, western Washington tribes have stepped rapidly into a position of significant legal and political power with respect to regional fisheries co-management and environmental management in general.

Tribal Science: Restoring Habitat

While it remains to be seen how western Washington treaty tribes will act on the results of the culvert case, they have in the meantime employed a variety of additional strategies to restore salmon habitat and recover harvestable runs of fish. These take place in conjunction with the efforts of state and federal natural resources agencies and environmental organizations, all galvanized by the ESA listing of Puget Sound salmon stocks in 1999. Despite their significant cultural, political, and geographic differences, all three of the federally-recognized Native American tribes of the Skagit Valley (Sauk-Suiattle, located in the mountains; Upper Skagit, located mid-river; and Swinomish, located on the saltwater near the river's mouth) produce scientific research in support of fisheries management and salmon recovery by hiring teams largely comprised of non-Native biologists, funded mostly through governmental grants. Scientific knowledge produced by these tribal research centers informs restoration projects designed to recreate a more habitable river system for the fish. Restoration strategies include planting trees along streams, removing and setting back dikes, removing and modifying culverts and tide gates, recreating spawning channels, and adding stream structure by anchoring logs into river banks, among other activities, all intended to release or replace the habitat-forming processes of the river. To date, these projects have been implemented primarily on public land, by purchasing private land, or by persuading landowners to voluntarily restore land, sometimes with financial compensation. Restoration work in the valley proceeds according to a highly technical and coordinated effort on the part of local tribes, state agencies, two state-supported salmon habitat restoration groups, and other environmental organizations.

In addition, between 1996 and 2008, the Swinomish Tribe led a legal campaign, supported in part by the state fish and wildlife agency and several local environmental groups, to add a regulatory component to their habitat restoration strategy in Skagit County.¹² The aim was to require wide (from 50 to 180 feet), vegetated buffers on all fish-bearing streams running through farmland. For their case, petitioners relied on the state's new Growth Management Act (GMA), a land-planning initiative that requires counties to limit urban development and protect natural resources—including both salmon habitat and farmland. Note that this dual mandate is itself responsible for considerable confusion and debate when the same places are viewed as both profitable farmland and as essential salmon habitat needing to be restored. But the GMA specifically stipulates that salmon habitat must be protected according to “best available science.” Thus, the tribe and other petitioners charged Skagit County with non-compliance under the GMA for not protecting salmon habitat according to the best available science. The 12-year court case hinged first on the definition of “best available science” and later on the definition of “protect.” The Washington State Supreme Court ultimately decided in favor of the farming community, defended by Skagit County, by interpreting the word “protect” to mean “protect the status quo” rather than “enhance existing habitat conditions.” In the meantime, the lawsuit had the effect of motivating a small group of local farmers in Skagit County to debate the definition of “science” and even hire their own consultants to produce the “best available science” about local riparian conditions that would hopefully meet their respective interests (Breslow 2001).¹³ In interviews, the litigation over habitat buffers was frequently identified by farmers, tribal members, and restoration advocates alike as the most proximate cause of hostilities surrounding salmon habitat restoration in the valley.

Farmers' Resistance: Protecting Heritage

Farmers resisted these scientific and legal strategies to restore salmon habitat on their land with multifaceted opposition. They wrote letters to the editor of the local paper, organized and unified in new ways, fought back in the courts, and successfully lobbied for direct changes to the state's hydraulics code, thereby exempting agricultural tidegates and floodgates from fish passage requirements. Skagit County, which has jurisdiction over all of the lower, inhabited part of Skagit Valley except for Indian

reservations, unequivocally supported the farmers' cause. Agriculture is the largest use of land in the lower valley and the largest single economic contributor to county revenues, and farmers have traditionally held the majority of the county's three commissioner seats. In addition, the local agricultural industry is supported by multiple local to national farming and farmland advocacy organizations. Yet although Skagit farmers are familiar with agricultural science, they were unprepared to engage in scientific debates with the tribes and state agencies concerning the ecological merits of salmon habitat restoration (despite the efforts of the small group of farmers mentioned earlier). Instead, while the Swinomish Tribe and its supporters predominantly employed scientific arguments in technical, legal, and public contexts, the farming community and Skagit County primarily relied on social, economic, and cultural counter-arguments.

Thus, in addition to leveraging political ties to county commissioners and state legislators, farmers appealed to deep-seated public anxieties about the loss of open pastoral land and American family farms. In public statements, Skagit farmers argued that habitat restoration on farmland would undermine an already dwindling land base to the point that arable acreage would slip below a "critical mass" necessary to maintain the economic viability of the local agricultural industry. They warned that with a weakened land base and economic structure farmland would fall into the hands of developers and the Skagit Valley would end up like Kent Valley to the south, a once-pastoral landscape now paved with big-box stores and industrial facilities. Therefore, they concluded that farmland actually protects salmon from the onslaught of development. They furthermore argued that local farms ensure a safe, local food supply; they lauded the agricultural industry's contribution to the local economy; and they repeatedly emphasized the unique, multi-generational heritage of Skagit Valley farming families. All of these assets, they implied, were threatened by efforts to convert their land to salmon habitat (Breslow 2011).

The farmers' fierce defense of their land and opposition to habitat restoration may be explained in part by the fact that while fishermen and other Northwesterners were documenting the century-long decline of salmon, American farmers were facing their own more recent drama of loss. The American "farm crisis" of the 1980s generated considerable local anxiety about the loss of farmland and family farms at the county, regional, and state levels. Between 1982 and 1997, for example, the Puget Sound region lost more than 20 percent of its farmland, 25 percent of its

farms, and eight of its nine commercial processing facilities, including a major processor in Skagit County (Canty and Wiley 2004). Analysts explain these changes as the result of globalization, corporate consolidation, and increasing property values for uses other than agriculture. In this context, Skagit farmers overwhelmingly viewed salmon habitat restoration in terms of loss—loss of land, productivity, and operational efficiency. But what they expressed the most fear about was the possibility that habitat restoration threatened the economic viability of the farm as a whole and therefore represented the potential loss of their livelihood, identity, and heritage as a farmer (Breslow 2001).

Blaming Fishermen and Opposing Restorationists

In addition to defending the value of agriculture and evoking its vulnerability, farmers opposed salmon habitat restoration by claiming that habitat loss due to agriculture was not a significant cause of salmon decline. Instead, they blamed fishing. In particular, many farmers as well as other non-Native people in the Skagit Valley blamed *tribal* fishing. Farmers argued that although most of the valley's farmland was reclaimed from lowland marshes in the late 1800s, they could still remember a heyday of fishing in the 1950s, and it was only since 1974 and the Boldt Decision that the fish runs appeared to take the steepest decline. Farmers expressed severe frustration at being targeted as the cause of salmon decline when it seemed obvious to them that fishing was the problem. In addition, since tribal harvesters continue to fish in the river and close to river mouths, they are still easily scapegoated as visible minorities, even though much non-tribal commercial fishing takes place off shore. As noted earlier, such anti-tribal fishing rhetoric dates back at least a century, despite records showing that tribal fishing has not been responsible for the majority of the harvests (Figure 1).

Tribal members and restorationists I talked to did not deny that tribal and non-tribal fishing alike has had a significant effect on salmon declines, but they noted that many other factors are also to blame, including habitat impacts from dams, mining, logging, development, and agriculture. They also pointed out that all of these are subject to some kind of regulation for the protection of salmon, except agriculture. From their perspective, the obvious unfairness was that the local agricultural industry is thriving while the local salmon fishery is all but gone. Furthermore, despite strict regulatory limits on harvests, tribal fishermen suggested they would be unwilling

to voluntarily stop fishing altogether since fishing is a major part of their cultural identity and an important expression of their treaty right and sovereignty. Tribal interviewees also pointedly observed that tribal fishing has not been the major cause of fish decline, but rather non-tribal commercial fishing and the development of the tribes' former lands which were ceded in exchange for reserving the very right to fish. As one tribal member put it, "If we're not fishing, well then what did we really receive for giving these people our land?...This is what we gave up our land for, and we're not going to stop fishing, you know, that's not in the cards."

Nevertheless, despite the fact that farmers blame tribal as well as non-tribal fishermen for the decline of the fish, and despite the growing political power of the tribes, the farmers I heard from did not view tribal members as their major opponents. Instead, they expressed special frustration with the mostly non-Native restoration advocates and scientists working on behalf of the tribes as well as for governmental agencies and NGOs. These were people who farmers constructed as urban, environmentalist, overly educated outsiders who were ignorant of what it takes to manage a rural working landscape, but who were nonetheless trying to tell them what to do with their land. As one farmer put it succinctly, "The worst streams are in the urban areas, and yet it is those people who are telling us what to do." In fact, farmers constructed "fish people" as outsiders and farmers as place-based resource users to such a degree that it was possible for one farm advocate to make the following statement without a hint of irony (note that he is referring to *farmers'* ancestors):

You know, there's a feeling on the other side...on the fish folks' side that, gee, you should just for the benefit of the fish, give up part of your ability to make a living...And so, you know, you've got the emotionalism of the generations, of the ancestors, out there, and you have the fact that any time anybody from a tribe or fisheries agency opens their mouth about what you should do on the [farmers'] land, they say something that can't be done—you just can't do it that way.

What this quote misses, of course, is that Native American fishermen already lost much of their ability to make a living from *fishing* and that it is also the "emotionalism of the ancestors" and the desire to protect their respective place-based livelihoods and heritage that is similarly motivating the tribes' defense of salmon.

Taking Care of the Land: Co-Constructions of Nature, Culture, and Power

Indeed, what is fundamentally at stake for both the farming and tribal communities is similar. Both have been co-constructed with the natural resources on which they depend, such that their resource-based livelihoods are integral parts of their cultural identities. As a farmer remarked, "There isn't really a dividing line between what we do for a living...and who we are," and as a tribal fisherman said, "You kind of grow up to it...it's in the blood...that's what defines Native Americans, is the hunting, the fishing, the gathering." Yet while both communities are motivated to defend the resources supporting their respective livelihoods, the co-construction of the tribal and farming communities with different generative capacities of the same river basin has resulted in seemingly incompatible ethics for how to manage the valley's natural resources and for what purpose. Furthermore, the relatively recent arrival of restoration advocates and environmental scientists to the valley has effectively added at least a third community to the mix (in addition to the valley's numerous other residents), who bring with them their respective ideas for how to manage the landscape. In effect, the valley has become a shifting terrain of nature-cultures, generated according to the contested place-making and claims-making abilities of its diversifying human inhabitants. At the same time, the variability and dynamism of the valley itself significantly shapes these efforts to create, restore, and defend specific landscapes.

Such culturally divergent relationships with the Skagit landscape became evident through an ethnographic and historical consideration of each community, as summarized below. Note that while I have attempted to draw out the major salient differences among the groups I studied, the fine-grained resolution of ethnographic research also underscores how communities are far from monolithic and static entities, but are rather internally diverse and continuously changing. In the Skagit case, it will be interesting to track whether such changes, although seemingly subtle at this point, eventually lead to unexpected alliances and new approaches to land and water management.

Farmers

In an exploration of Skagit farmers, I therefore begin with a caveat. Although the politically powerful core of the agricultural community hews to convention, a handful of established farmers have warmed to new trends,

such as adopting organic practices for economic reasons, participating in the Nature Conservancy's "farming for wildlife" program which pays them to temporarily flood their fields for shorebird use, and even accepting financial compensation to convert marginal acreage into salmon habitat. In addition, a new if relatively small set of younger farmers is emerging who reflect the greener philosophy of their generation. Some of these are older farmers' children, influenced by environmental themes in college; others are urban and activist newcomers implementing ideals of environmental health and justice on new organic and community-based farms. While my study focused on conventional family farmers, it remains to be seen if and how these newer farmers will influence the valley's broader, historically-rooted agricultural paradigms and practices.

In interviews, Skagit family farmers were especially explicit in their allegiance to forebears who made their current agricultural livelihoods possible. For farmers with a heritage of four or five generations in the valley, the idea of willingly converting farmland to salmon habitat was equivalent to being ungrateful to their ancestors. As one agricultural advocate explained:

Farmers feel as though they've got to go out to those gravestones and say, "I gave away part of my heritage that you chopped out of this place, and I'm sorry that I did that."...And they feel as though they have to apologize to their ancestors that worked damned hard to get it to the point where it is now.

These farmers were also anathema to giving up good farmland they had personally created. As one farmer said, "We have worked and worked and worked to improve the fertility and the tilth...We've hauled tons of straw and grass seed chaff onto that ground, and tons of cow manure." Skagit farmers pride themselves on maintaining exceptionally productive and well-manicured fields.

What is perhaps less immediately obvious is that the landscape also made the farming community. In other words, the people and social structure making up the core of the contemporary agricultural community literally grew from the unique demands of creating and maintaining an arable landscape in a river delta prone to flooding and tidal inundation. As one farmer explained:

Back into the late 1800s, early 1900s, you know, this was all swamp-land and trees here. And so all the agricultural land that you see, basically somebody put their back into it all and created it... You know, they didn't hire out; they grew their workforce. So if they wanted to farm a little bit more they had another kid. And so over time, what that created was a really strong bind. Not only inside of a family, but amongst families, because they were all working together. Take a look, just for instance, the drainage system around here. It's one thing where...you could drain right straight to the bay or something. But you also depended on all your contiguous neighbors.

In the low-lying area of the Skagit delta, agriculture depends on an intricately engineered system of dikes and drainage ditches, much like the Netherlands (which is, in fact, where several local farmers trace their ancestry). Coordinating the diking and drainage system necessitates cooperation among all of the families within a basin. If any one farmer shirked their responsibility, the dike might break, causing the river to flood catastrophically into neighboring farms. In the early days of Skagit agriculture, this was a regular occurrence and led to the development of cooperatively managed diking and drainage districts, quasi-governmental social structures that persist to this day and are an essential part of the Skagit farming system (Duncan 1998, Willis 1973).

Skagit farmers frequently expressed an ethic of agricultural stewardship in their belief that farming is what the land should be used for and that farmers are responsible for maintaining its productivity. The sign of a good farmer could be seen in how well he or she worked the land; however, *not* working the land, farmers suggested, was not a recognizable category within their paradigm. To their irritation, "natural" was a quality that restorationists seemed to want to create or impose on what was otherwise a working landscape. Moreover, several farmers made reference to the Christian religion and the "ancient role" of farming, thereby invoking a heritage that is thousands of years old—albeit originating on a different continent—and which they have attempted to recreate in the Skagit Valley. Such deep-seated attachment to the place they have created, and which in turn creates them, is at least in part what motivates their determination to protect it.

Native Americans

That local Native Americans are also deeply attached to the Skagit Valley is most obviously revealed in its name. “Skagit,” or in its orthographic spelling *sqáǵet*, is the name of the Lushootseed-speaking Coast Salish people who lived on the lower Skagit River and nearby islands, the descendants of whom currently reside on two local Indian reservations, along with the descendents of neighboring groups (Roberts 1975). Despite the move to reservations and general modernization over the last century, and despite popular notions to the contrary, contemporary Native Americans in the Skagit Valley and elsewhere in the Northwest region continue to rely directly and extensively on their local environment for sources of food, ceremonial materials, spiritual power, and cultural identity (Donatuto 2008, Onat and Hollenbeck 1981, Sepez 2001).

As with the Skagit farming community, Native Americans developed cooperative social systems in order to cope with the dynamism of their local environment (Suttles 1987). For example, the problem of how to allocate salmon was addressed through territorial fishing grounds, potlatching, and intermarriage among families in different river basins, which helped ensure access to what was a highly variable and unpredictable resource. Despite new reservation and tribal affiliations dating to the time of the treaties, contemporary Native communities also reflect pre-treaty historic kin networks, as evidenced by an extended family gathering that drew members from Canada and eastern Washington state.

What is less recognized is that the indigenous people of the Skagit Valley also significantly shaped their landscape. European explorers were delighted to discover “natural” prairies in the Skagit area—gently rolling pastoral hills dotted with oak trees, reminiscent of “the most admired Parks of England” (Whidbey as quoted in Boyd 1999:1)—which proved to be ideal locations for their first settlements. However, as some of the first settlers observed and subsequent research has shown, many of these “natural” prairies were in fact created and maintained by Native people with intentional periodic burns to improve hunting and gathering and clear sites for cultivation. In addition to their well-known reliance on fish and shellfish for protein, what is less widely appreciated is that Coast Salish people actively tended edible plants as their major sources of starch in prairies, ponds, and estuarine “gardens,” among other practices that influenced the vegetation ecology of the area (Deur and Turner 2005, White 1999).

Furthermore, the Skagit Valley is the setting for the origin stories of Native Americans who trace their ancestry there (Onat and Hollenbeck 1981). Coast Salish spiritual beliefs may inspire a Native sense of responsibility to care for the landscape not only because it is a source of food and important materials, but also because it is imbued with the spirits of their ancestors. As a member of the Stó:lō Nation to the north explains: "So throughout the territory you have all these different resources that were at one time ancestors who were transformed so we could have those resources...So that brings us back, then, to... 'This is our land and we have to take care of everything that belongs to us'" (McHalsie 2007:105-108).

Contemporary western Washington tribes have the additional responsibility to "take care" of the fisheries and fish habitat in their official capacity as natural resource co-managers. But they face the hurdles of local farmers' parallel commitment to agricultural stewardship, as well as property rights activism and anti-Indian prejudice. In stark words, a Native elder explained the tribes' dilemma of how to convince non-Native people to care for the salmon and restore their habitat:

I find them, the white people kind of strange in that sense because I can't get them to understand why it's important you need to protect that streambed, protect the home of the salmon...I'm not in a position as an Indian to go tell white people. I can tell him he's wrong, I can voice my opinion that way, but it's got to be the white people that's got to change within themselves before we can reach [a] conclusion...I don't know [how that is going to happen]. Find some intelligent white people, I guess, that are environmentally concerned. 'Cause I can't force the knowledge on you. Although I know it's been imposed on Indian people. But I can't force you to change. If I tried I'd be shot right now.

It may be in part because of the prejudiced social context in which they are forced to operate that Native American tribes indeed hire "environmentally concerned," largely white professionals to help them recover the salmon and restore the habitat.

Other tribal interviewees offered additional reasons for engaging Western science. As one tribal member explained to me, 30 years ago his elders concluded that the only way to protect their way of life was to "learn the ways of the enemy," namely science and law. Another tribal elder

took a less stark view, suggesting that when it came to salmon ecology, Western science and indigenous knowledge were not so different given that tribal fishermen and salmon biologists both observe the same natural phenomena. Another interviewee expressed interest in training younger tribal members to eventually take over the fisheries scientist positions at the tribe. Perhaps the most authoritative explanation came from the chairman of the Swinomish Tribe, whose litigious approach to restoring salmon habitat is considered among the most aggressive in the state. In our interview, I hypothesized that the Skagit case seemed to upend common preconceptions: "One thing that's interesting and unique and sometimes seems ironic," I ventured, "is that...the legal and scientific strategy is coming from the tribes, and the cultural arguments are coming from the farmers." The chairman responded:

That's a real good point. I mean, when you go to build something... you don't try to recreate the wheel. And if the tools have been created, you go out there...and you use them. This is something that tribes have had to adapt to...You know, we're adapting. We have to use the tools that are available to us, to be able to achieve what we see as a great need. To make sure that Chinook are here forever. And if one of those tools are to use the legal approach, or if one of those tools are to use the Western science approach, so be it. That's what we need to do. I mean, the bottom line is culture is very, very important to our people.

Western Washington tribes are limited to using "best available science" as a tool just like any other party attempting to influence state environmental management policies and practices that are still narrowly defined according to a natural science paradigm. But unlike Paul Nadasdy, who observed a similar constraint among the First Nations Kluane people of Canada to "play by the rules of state wildlife management" (2003:264), I did not observe this as an inevitable process of assimilation or cooptation in the Skagit case. Skagit tribes hire Western scientists deliberately and with apparent gratitude: "tribal" biologists were blessed along with tribal fishermen during the Swinomish Tribe's First Salmon Ceremony, for example. Furthermore, despite relying on Western science in the legal and public spheres, there is noticeable and growing enthusiasm for revitalizing Native languages, knowledge, and resource management practices within

tribal communities and on reservations, as evidenced by the launch of the Institute of Indigenous Foods and Traditions and the Native Environmental Science program at the Northwest Indian College. Although the tribes are not (yet) in a position to change the rules of the natural resource management game, if they were to attain such a position it remains to be seen whether they would use that opportunity to change the rules, and if so, how. For example, how might lessons from these new tribal programs apply to the larger pluralistic region? In the meantime, by employing non-Native environmental scientists for their broader salmon recovery goals, the tribes effectively engage a third land management philosophy that differs significantly from both an agricultural and an indigenous one.

Restoration Advocates

Unlike the Skagit farming and tribal communities, most professional restoration advocates are not from the Skagit Valley originally and do not depend directly on its resources. Instead, in interviews many traced their inspiration for environmental protection to meaningful childhood experiences and eye-opening environmental science classes where they learned about ecology, hydrology, geology, and their interconnections. As one restorationist put it, "I came out of university with a very clear sense of everything is related and everything is connected." As another said, "I took an environmental studies course...and I just kind of went, 'Wow! You're not going to be able to do anything in the future unless you have a clean environment!'" Restoration advocates suggested their conservation work in the Skagit Valley was motivated by a broad commitment to protecting or improving the ecological health of the planet in general.

Restorationists collectively constructed nature, and the Skagit River in particular, as something with an inherent agency and the right to exist free from human intervention. As one restorationist explained:

So the world outlook would be one of we do not dominate nature. Dominating nature is...we can control it, we can take the machinery and we can retool it in any way we want, and it'll work. Well, I don't agree with that, and I feel that the way that the world *really* works is that we are a part of nature, and that we are subject to its whims.

With this philosophical orientation, restorationists are attempting to put into practice new ideas for how humans should relate to the environment.

This entails working in community-based organizations to make bottom-up changes, as well as reshaping the scale of political decision-making to the scale of the resources on which society depends—in this case, the watershed.

Like salmon fishermen, however, restorationists are faced with the challenge of not having direct control over the environment, and therefore they must find ways to influence the people who do in order to achieve their goals. Unlike the tribes, restorationists lack access to the legal power of the treaties and the Boldt Decision. Instead, restorationists appear to depend largely on science as their main source of political and legal power. Most concretely, the ESA and GMA requirements to base critical habitat protection on “best available science” grant legal and regulatory power to science. In addition, restorationists use scientific and technical information to leverage funding for their work and to gain credibility with their peers. It may be due not only to the empirical validity and technical utility of science, but also to its potential as an avenue for legal, economic, and cultural influence, therefore, that Skagit restorationists invest a huge amount of time, effort, and resources in producing and defending the science that supports their work. Restoration projects—whether supported by tribal or non-tribal entities—are shaped accordingly, such that the philosophical prerequisite of modern science to separate nature and culture—Latour’s (1993) “modern constitution”—is inscribed on the ground.

Conclusion: Political Ecology and Environmental Management in the American Northwest

The foregoing explanation for why the Skagit case presents an unusual, even ironic, scenario relative to those more commonly presented in the political ecology and environmental anthropology literatures suggests at least four major conclusions. First, contrary to constructions of Western relationships with the environment as strictly economic, rational, or aesthetic, the Skagit case suggests that at least three communities in a relatively wealthy, urbanizing region of the American West expend tremendous energy defending, recreating, and newly creating distinctly moral and cultural relationships with a river valley. Two of these—farmers and Native Americans—are clearly place-based communities, co-constructed with the diversity and dynamism of the valley’s natural resources.

Second, the Skagit case underscores the importance of historical contingency and national policy in shaping the relationship between indigenous people and the state. It is clear that the treaties of 1855, tribal activism, and the support of the US court system have enabled Native American tribes in western Washington to gain rare and significant access to legal, political, and scientific avenues of power relative to indigenous people elsewhere in the world. In turn, western Washington treaty tribes strategically employ scientific arguments in legal, technical, and public contexts in their effort to restore salmon habitat. In these contexts, such "tribal science" does not obviously benefit from the incorporation of TEK and participatory approaches. Nevertheless, if the tribes' legal and scientific strategies allow tribal fishermen to harvest salmon in significant numbers, they will ultimately enable the revitalization of traditional cultural practices and TEK. In this way, and by way of a third conclusion, the Skagit case cautions against constructions of Western science and state power as necessarily threatening to or erosive of indigenous culture.

On the other hand, and fourth, the Skagit case also underscores how conventional science, whether wielded by a tribe or other entity, still does not account for the sociocultural complexity of environmental problems, nor does it recognize the significance of cultural landscapes. Restoration science in the Skagit Valley persists in discursively separating nature and culture even as it obviously generates new nature-cultures on the ground (Latour 1993). In doing so, it produces a landscape and reproduces a Western paradigm that contrasts with, even as it arguably facilitates, a larger movement to promote an indigenous environmental management philosophy. In addition, the application of environmental science through habitat restoration engenders the anger and resentment of place-based farmers whose cultural as well as economic attachments are eclipsed from scientific models of the landscape, even as they see it being reshaped according to urban ideals.

It is this, perhaps unintended, consequence of the overwhelmingly natural science approach to salmon habitat restoration in Washington state that points to the most salient policy and management implications raised by this ethnographic exploration of the Skagit case (see also Breslow 2014). Although tribal and environmental groups alike recognize and strategically wield the legitimizing power of scientific arguments in the courts and governmental agencies, the same discursive arguments prove less effective—and arguably even counter-productive—among those people,

such as rural landowners, whose behavior has the most direct consequences for the habitat in question.

It is a social scientific and specifically ethnographic exploration of the larger historical and social context of the conflict that can uncover the cultural factors that motivate farmers to protect farmland, explain why they resist habitat restoration efforts, and suggest why arguments based on fisheries and restoration science fail to legitimize restoration goals within the agricultural community. Yet, the state continues to frame salmon habitat restoration as a natural science problem and to rely nearly exclusively on natural scientists and techno-scientific conceptual frameworks to explain and propose solutions to the problem. This globally pervasive, *instrumentalist* approach to environmental management (see Miller 2004:84)¹⁴ is mandated by the state's legal code which requires habitat protection and restoration to be based on "best available science." It is also reflected in the hiring choices of state and federal natural resource agencies, and of the University of Washington's new College of the Environment. At these institutions, natural scientists vastly outnumber social scientists, despite profuse rhetoric acknowledging the important "human dimensions" of the environmental problems at hand. It would take changes in all of those places where the rules of the game *can* be influenced—in educational curricula and faculty hires to legislation and agency appointments—to effectively integrate the insights of the environmental social sciences and humanities into mainstream environmental management. Doing so would, ideally, finally enable a substantive understanding of the diverse and complex "human dimensions" of environmental problems that, combined with ongoing attention to their ecological dimensions, could suggest culturally appropriate and socially effective solutions.

On the other hand, taking such a vision for a new paradigm of environmental science to its logical conclusions raises several caveats. First, it would demand consideration—by scientists, humanistic scholars, and co-managers alike—of the social contexts and place-based knowledges of all actors in a resource conflict, including, in the Skagit case, tribal fishermen, commercial farmers, urban restorationists, and others developing divergent relationships with the same landscape. But such an approach may not obviously serve existing political goals and allegiances, raising the question of what would motivate these actors to choose a socially-informed rather than instrumentalist approach. Second, how could a social analysis of an environmental problem that legitimizes place-based knowledge

and identities translate effectively—and fairly—into policy decisions? How would political discourse not then simply devolve into a debate about what counts as culture, as in the Makah case, rather than what counts as science, as in the Skagit case? And finally, the question that plagues environmental advocates: how would the legitimation of social considerations in environmental management not be used to simply reassert social and economic priorities above environmental quality? Ideally, a social understanding of environmental problems enables solutions that serve both social and ecological goals, and reveals how they are interdependent.

Despite such doubts, the Skagit case exemplifies the explanatory benefits of an ethnographic study of the major themes of political ecology in a “First World” context. It also cautions, however, against allowing familiar storylines and conventionally accepted allegiances and antagonisms to obscure an understanding of how relationships among those themes may have shifted and are realigning into unexpected, yet still potentially hopeful, narratives of social and environmental change. ■

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Endnotes:

¹“Wise Use” was a rural American social movement active between the late 1980s and mid-1990s. Of primary concern was maintaining access to natural resources on federal lands in the American West. Note that although McCarthy’s (2002) ethnographic investigation suggests the motivations of its rural participants were genuine, the overall movement has been characterized elsewhere as a front for major resource extraction corporations that co-opted grassroots activism for their own interests (e.g., see Helvarg 1994).

²See also Washington Administrative Codes 365-195-905 and 365-195-915.

³*Friends of Skagit County et al. v. Skagit County*, WWGMHB, No. 96-2-0025, Compliance Hearing Order and *Skagit Audubon Society et al. v. Skagit County*, WWGMHB, No. 00-2-0033c, Final Decision and Order (August 9, 2000).

⁴The whole passage reads:

The science which the County is using is the science that considers all aspects of the CAs [critical areas] and the resource areas that need to be protected; the science that recognizes that BMPs [best management practices] must be tailored to site-specific circumstances and cannot be applied across the board; the science that recognizes that applying BMPs voluntarily through agricultural resource agencies is working; the science that recognizes that providing incentives to

impose BMPs is more effective than imposing them as regulations; the science that recognizes that there are complex issues involved in the WSP [wild salmonid policy] process that involves the input from stakeholders before regulations are imposed; the science that recognizes the practical difficulty of repairing and maintaining dikes that have extensive trees and vegetation on them; and the science that refuses to shut down barely economically profitable agricultural operations with excessive buffer requirements...that would remove approximately 4,000 acres of land from agricultural productions. (*Friends of Skagit County et al. v. Skagit County*, WWGMHB, No. 96-2-0025, Compliance Hearing Order, September 16, 1998)

⁵To be clear, western Washington tribes' access to science and state power is enabled by their indigenous status as codified by the treaties of 1855 and subsequent legal interpretations of those treaties. But I rarely heard rhetorical use of the tribes' indigenous identity and culture in the science-heavy debates surrounding salmon habitat restoration.

⁶Note that salmon-fishing tribes, unlike the Makah, have not attracted pressure from international animal rights activists to justify the morality of their harvests on cultural grounds, presumably since salmon, unlike whales, are widely fished and eaten by Native and non-Native people alike (cf. Martello 2004). Thus, there is less incentive to wield cultural arguments in defense of salmon fishing. On the other hand, non-Native Skagit Valley locals do frequently question the cultural legitimacy of tribal fishing in the context of harvest allocations and practices, yet such doubts have not steered the terms of the habitat restoration debate away from its dominant scientific and legal themes. Regional debates surrounding salmon harvest allocations among user groups are arguably more complex than those around habitat restoration and warrant further exploration along these themes.

⁷The ten salmonids inhabiting the Skagit river are Chinook, Coho, Chum, Pink, Sockeye, Steelhead Trout, Cutthroat Trout, Dolly Varden, Bull Trout, and Mountain White Fish.

⁸Note that this is a stacked bar graph, such that the height of each bar represents total harvest while different shades of grey represent the proportion harvested by each user group. This chart was produced in order to visualize relative harvests over time and by user groups; a more detailed analysis of the historical evidence is warranted. Note that according to historical records, reported commercial harvests at the turn of the 19th century fell well below actual harvests (see Gayeski et al. 2011:499).

Sources and methods: 1889-1933 commercial harvest data were compiled from selected reports of the United States Commissioner of Fisheries for the fiscal years 1888-1935 (Collins 1892:235; Wilcox 1895:146, 1906:31; Smith 1898:CXXXVIII; Townsend 1902:511; Cobb 1911:70, 1917:149, 1922:146; Sette 1926:278, 336, 1928:420, 436; Sette and Fiedler 1929:502; Fiedler 1930:560, 1931:974, 1932:437, 1933:353, 1934:322, 1936a:164, 1936b:257). Harvest was reported in pounds of fish for this period, and harvest per user group was not reported. Pounds were converted to numbers of fish using the average pounds per fish for commercial harvests reported during the subsequent ten years, 1935-1945 (Robison et al. 1965:17, 23). (The average from all reported years was not used because the average weight of commercial salmon declined over the century.) Average weights for odd and even years were calculated and applied separately to account for the variation caused by biannual Pink runs. Total harvests for non-reported years between 1889 and 1921 were estimated from reported cannery packs for those years (Cobb 1930:553-554). First, Columbia River cannery packs for the Washington side only were estimated for 1889-1916 from Columbia River packs that were reported by state (i.e., Washington and Oregon) for the period of 1917-1928 (Cobb 1930:564). These were then added to packs reported for the Puget Sound and Washington coast. Second, total harvests were estimated from these reconstructed Washington cannery pack figures by finding the proportion of total harvests consumed by cannery packs for those years for which total state harvest was reported, and then extrapolating total harvest for the intervening years, again using different averages for odd and even years to account for Pink runs. 1935-1995 data are from Washington state fisheries statistical reports (Robison et al. 1965, Ward and Hoines 1985, Hoines 1998). Note that for this period, commercial, non-tribal harvest is total commercial harvest minus tribal harvest; sport harvest through 1979 consists of Chinook and Coho landings only; and tribal harvest through 1949 is estimated from data on landings by gear ("Other Gear") for all areas for Chinook, Coho, and Chum, and for Puget Sound for Pink and Sockeye. 1995-2009 data are courtesy of Lee Hoines and Eric Kraig at the Washington Department of Fish and Wildlife. 2009 figures are provisional. Data are presented for odd years only to reduce stochasticity due to biannual Pink runs.

⁹See the Treaty of Point Elliott 1855, Article 5, available on the Washington State Governor's Office of Indian Affairs at <http://www.goia.wa.gov/treaties/treaties/pointelliott.htm> (last accessed on June 13, 2013).

¹⁰*U.S. v. Washington*, 384 Federal Supplement 312, U.S. District Court, Western District of Washington, 1974.

¹¹U.S. v. *Washington*, No. CV 9213RSM, 2007.

¹²Note that the Upper Skagit Tribe did not support the Swinomish litigation, instead choosing to pursue their environmental management goals through a collaborative approach with the county and local land-owners. Indeed, the Upper Skagit Tribe warrants attention as a comparative case in the Skagit Valley.

¹³*Swinomish Indian Tribal Community v. Western Washington Growth Management Hearings Board*, Supreme Court of the State of Washington, No. 76339-9, Opinion Information Sheet, September 13, 2007.

¹⁴Miller (2004:84) defines "instrumentalism," following Ezrahi (1990), as "the ideological use of science and technology to depoliticize the use of power, particularly through the depersonalization of public action... social problems become the domain of expert analysis and solution. At the same time, instrumentalism (in Ezrahi's model) offers democratic publics a way to hold governments accountable for their actions."

References:

- Agrawal, Arun. 1995. "Dismantling the Divide between Indigenous and Scientific Knowledge." *Development and Change* 26(3):413-439.
- Beamer, Eric. 2009. "Thoughts on Traditional Ecological Knowledge, Values, and Salmon Management." Paper presented at the Puget Sound Georgia Basin Ecosystem Conference, Seattle, Washington, February 10.
- Beamer, Eric, Rebecca Bernard, Bob Hayman, et al. 2005. *Skagit Chinook Recovery Plan*. La Conner: Skagit River System Cooperative and Washington Department of Fish and Wildlife.
- Blumm, Michael C. and Jane Steadman. 2010. "Indian Treaty Fishing Rights and Habitat Protection: The Martinez Decision Supplies a Resounding Judicial Reaffirmation." *Natural Resources Journal* 49:653-706.
- Bolton, Susan M. and Jeff Shellberg. 2001. *Ecological Issues in Floodplains and Riparian Corridors*. Seattle: Center for Streamside Studies, University of Washington. Accessed from <http://www.wsdot.wa.gov/research/reports/fullreports/524.1.pdf> on June 13, 2014.
- Boxberger, Daniel L. 1989. *To Fish in Common: The Ethnohistory of Lummi Indian Salmon Fishing*. Lincoln: University of Nebraska Press.
- Boyd, Robert T. 1999. *Indians, Fire, and the Land in the Pacific Northwest*. Corvallis: Oregon State University Press.
- Breslow, Sara Jo. 2001. *Farmers' Perceptions of Salmon Habitat Restoration Measures: Loss and Contestation*. Seattle: Society for Applied Anthropology and U.S. Environmental Protection Agency.
- _____. 2011. "Salmon Habitat Restoration, Farmland Preservation and Environmental Drama in the Skagit River Valley." Ph.D. Dissertation, Department of Anthropology, University of Washington.
- _____. 2014. "A Complex Tool for a Complex Problem: Political Ecology in the Service of Ecosystem Recovery." *Coastal Management* 42:1-24.
- Canty, Dennis and Helena Wiley. 2004. *A Characterization of Puget Sound Agriculture: A Report to the Puget Sound Shared Strategy*. Seattle: Evergreen Funding Consultants.
- Cobb, John N. 1911. "The Salmon Fisheries of the Pacific Coast." Bureau of Fisheries Document No. 751. *Report of the Commissioner of Fisheries for the Fiscal Year 1910 and Special Papers*. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1917. "Pacific Salmon Fisheries." Bureau of Fisheries Document No. 839. *Report of the United States Commissioner of Fisheries for the Fiscal Year 1916*, Appendix III. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1922. "Pacific Salmon Fisheries." Bureau of Fisheries Document No. 902. *Report of the United States Commissioner of Fisheries for the Fiscal Year 1921*, Appendix I. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.

- _____. 1930. "Pacific Salmon Fisheries." Bureau of Fisheries Document No. 1092. *Report of the Commissioner of Fisheries for 1930*, Appendix III. Washington, DC: Bureau of Fisheries. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- Collins, J.W. 1892. "Report on the Fisheries of the Pacific Coast of the United States." *Report of the Commissioner for 1888 (July 1, 1888-June 30, 1889)*, 3-269. Washington, DC: US Commission of Fish and Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- Copsey, Alan. 1999. "Including Best Available Science in the Designation and Protection of Critical Areas under the Growth Management Act." *Seattle University Law Review* 23(1):97-143.
- Cronin, Amanda and David Ostergren. 2007. "Tribal Watershed Management: Culture, Science, Capacity and Collaboration." *The American Indian Quarterly* 31(1):87-109.
- Deur, Douglas and Nancy J. Turner. 2005. *Keeping It Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*. Seattle: University of Washington Press.
- Dombrowski, Kirk. 2002. "The Praxis of Indigenism and Alaska Native Timber Politics." *American Anthropologist* 104(4):1062-1073.
- Donatuto, Jamie. 2008. "When Seafood Feeds the Spirit Yet Poisons the Body: Developing Health Indicators for Risk Assessment in a Native American Fishing Community." Ph.D. Dissertation, Institute for Resources, Environment and Sustainability, University of British Columbia.
- Duncan, Shane. 1998. "'What the River Gives the River Takes Away': Dikes, Drains and Life on the Skagit Delta." M.A. Thesis, Department of History, Western Washington University.
- Escobar, Arturo. 1996. "Constructing Nature: Elements for a Poststructural Political Ecology." In Richard Peet and Michael Watts, eds. *Liberation Ecologies: Environment, Development, Social Movements*, 46-68. London: Routledge.
- Ezrahi, Yaron. 1990. *The Descent of Icarus: Science and the Transformation of Contemporary Democracy*. Cambridge: Harvard University Press.
- Fiedler, R.H. 1930. "Fishery Industries of the United States, 1928." Bureau of Fisheries Document No. 1067. *Report of the United States Commissioner of Fisheries for the Fiscal Year 1929*, Appendix IX. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1931. "Fishery Industries of the United States, 1929." Bureau of Fisheries Document No. 1067. *Report of the United States Commissioner of Fisheries for the Fiscal Year 1930*, Appendix IX. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1932. "Fishery Industries of the United States, 1930." *Report of the United States Commissioner of Fisheries for the Fiscal Year 1931*, Appendix II. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1933. "Fishery Industries of the United States, 1931." *Report of the United States Commissioner of Fisheries for the Fiscal Year 1932*, Appendix II. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1934. "Fishery Industries of the United States, 1932." *Report of the United States Commissioner of Fisheries for the Fiscal Year 1933*, Appendix III. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1936a. "Fishery Industries of the United States, 1933." *Report of the United States Commissioner of Fisheries for the Fiscal Year 1934*, Appendix I. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1936b. "Fishery Industries of the United States, 1934." *Report of the United States Commissioner of Fisheries for the Fiscal Year 1935*, Appendix II. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.

- Forsyth, Tim. 2003. *Critical Political Ecology: The Politics of Environmental Science*. London: Routledge.
- Fortmann, Louise. 2008. *Participatory Research in Conservation and Rural Livelihoods: Doing Science Together*. Chichester: Wiley-Blackwell.
- Gayeski, Nick, Bill McMillan, and Pat Trotter. 2011. "Historical Abundance of Puget Sound Steelhead, *Oncorhynchus mykiss*, Estimated from Catch Record Data." *Canadian Journal of Fisheries and Aquatic Sciences* 68(3):498-510.
- Hays, Samuel P. 1959. *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920*. New York: Atheneum.
- Helvarg, David. 1994. *The War Against the Greens: The "Wise-Use" Movement, the New Right, and Anti-environmental Violence*. San Francisco: Sierra Club Books.
- Hodgson, Dorothy L. 2002. "Introduction: Comparative Perspectives on the Indigenous Rights Movement in Africa and the Americas." *American Anthropologist* 104(4):1037-1049.
- Hoines, Lee. 1998. *Washington State Statistical Report, 1995*. Olympia: Department of Fish and Wildlife.
- Ichikawa, Morihiro. 2001. "Understanding the Fishing Rights of the Ainu of Japan: Lessons Learned from American Indian Law, the Japanese Constitution, and International Law." *Colorado Journal of International Environmental Law and Policy* 12(Summer):255-301.
- Knutson, K. Lea and Virginia L. Naef. 1997. *Management Recommendations for Washington's Priority Habitats: Riparian*. Olympia: Washington Department of Fish and Wildlife. Accessed from <http://wdfw.wa.gov/publications/pub.php?id=00029> on June 13, 2014.
- Latour, Bruno. 1993. *We Have Never Been Modern*. Cambridge: Harvard University Press.
- Lombard, John. 2006. *Saving Puget Sound: A Conservation Strategy for the 21st Century*. Seattle: American Fisheries Society and University of Washington Press.
- Martello, Marybeth Long. 2004. "Negotiating Global Nature and Local Culture: The Case of Makah Whaling." In Marybeth Long Martello and Sheila Jasanoff, eds. *Earthly Politics: Local and Global in Environmental Governance*, 263-284. Cambridge: MIT Press.
- McCarthy, James. 2002. "First World Political Ecology: Lessons from the Wise Use Movement." *Environment and Planning A* 34(7):1281-1302.
- McHalsie, Albert Jules. 2007. "We Have to Take Care of Everything That Belongs to Us." In Bruce Miller, ed. *Be of Good Mind: Essays on the Coast Salish*, 82-130. Vancouver: University of British Columbia Press.
- Miller, Clark A. 2004. "Resisting Empire: Globalism, Relocalization, and the Politics of Knowledge." In Sheila Jasanoff and Marybeth Long Martello, eds. *Earthly Politics: Local and Global in Environmental Governance*, 81-102. Cambridge: MIT Press.
- Nadasdy, Paul. 2003. *Hunters and Bureaucrats: Power, Knowledge, and Aboriginal-State Relations in the Southwest Yukon*. Vancouver: University of British Columbia Press.
- Neumann, Roderick P. 1991. "Political Ecology of Wildlife Conservation in the Mt. Meru Area of Northeast Tanzania." *Land Degradation and Rehabilitation* 3(2):85-98.
- Onat, Astrida and Jan Hollenbeck, eds. 1981. *Inventory of Native American Religious Use, Practices, Localities, and Resources: Study Area on the Mt. Baker-Snoqualmie National Forest, Washington State*. Seattle: Institute of Cooperative Research.
- Peet, Richard and Michael Watts. 1996. "Liberation Ecology: Development, Sustainability, and Environment in an Age of Market Triumphalism." In Richard Peet and Michael Watts, eds. *Liberation Ecologies: Environment, Development, Social Movements*, 3-43. London: Routledge.
- Peluso, Nancy Lee. 1993. "Coercing Conservation? The Politics of State Resource Control." *Global Environmental Change* 3(2):199-217.
- Roberts, Natalie. 1975. "A History of the Swinomish Tribal Community." Ph.D. Dissertation, Department of Anthropology, University of Washington.
- Robison, Robert, Dale Ward, and Gene Nye. 1965. *Fisheries Statistical Report*. Olympia: State of Washington, Department of Fisheries.

- Sepez, Jennifer. 2001. "Political and Social Ecology of Contemporary Makah Subsistence Hunting, Fishing and Shellfish Collecting Practices." Ph.D. Dissertation, Department of Anthropology, University of Washington.
- Sette, Oscar E. 1926. "Fishery Industries of the United States, 1924." Bureau of Fisheries Document No. 997. *Report of the United States Commissioner for the Fiscal Year 1925*, Appendix VII. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1928. "Fishery Industries in the United States, 1926." Bureau of Fisheries Document No. 1025. *Report of the United States Commissioner of Fisheries for the Fiscal Year 1927*, Appendix V. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- Sette, Oscar E. and R. H. Fiedler. 1929. "Fishery Industries of the United States, 1927." Bureau of Fisheries Document No. 1050. *Report of the United States Fish Commissioner for the Fiscal Year 1928, Part I*, Appendix IX. Washington, DC: US Bureau of Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- Smith, H. M. 1898. "Report of the Division of Statistics and Methods of the Fisheries." *Report of the Commissioner for the Year Ending June 30, 1897*, CXXV-CXLVI. Washington, DC: US Commission of Fish and Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- Smith, Linda. 1999. *Decolonizing Methodologies: Research and Indigenous Peoples*. London: Zed Books.
- Suttles, Wayne P. 1987. *Coast Salish Essays*. Vancouver: Talonbooks.
- Tomblin, David. 2009. "The Ecological Restoration Movement." *Organization & Environment* 22(2):185-207.
- Townsend, C.H. 1902. "Report of the Division of Statistics and Methods of the Fisheries." *Report of the Commissioner for the Year Ending June 30, 1901*, 141-166. Washington, DC: US Commission of Fish and Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- Ward, W. Dale and Lee J. Hoines, eds. 1985. *Fisheries Statistical Report*. Olympia: State of Washington, Department of Fisheries.
- White, Richard. 1999. "Indian Land Use and Environmental Change: Island County, Washington." In Robert T. Boyd, ed. *Indians, Fire, and the Land in the Pacific Northwest*, 36-49. Corvallis: Oregon State University Press.
- Wilcox, W.A. 1895. "Pacific Coast Fisheries." *Report of the Commissioner for the Year Ending June 30, 1893*, 139-304. Washington, DC: US Commission of Fish and Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- _____. 1906. "The Commercial Fisheries of the Pacific Coast States in 1904." Bureau of Fisheries Document No. 612. *Report of the Commissioner of Fisheries for the Fiscal Year 1905 and Special Papers*. Washington, DC: US Commission of Fish and Fisheries. NOAA Central Library Data Imaging Project. Accessed from http://www.lib.noaa.gov/collections/imgdocmaps/fish_com_annualreport.html on June 13, 2014.
- Willis, Margaret, ed. 1973. *Chechacos All: The Pioneering of Skagit*. Mount Vernon: Skagit County Historical Society.
- Zerner, Charles, ed. 2000. *People, Plants, and Justice: The Politics of Nature Conservation*. New York: Columbia University Press.

Foreign Language Translations:

Tribal Science and Farmers' Resistance: A Political Ecology of Salmon Habitat Restoration in the American Northwest

[**Keywords:** Environmental conflict, science studies, place-making, agriculture, Native Americans]

Ciência Tribal e Resistência Camponesa: Uma Ecologia Política da Restauração dos Habitats do Salmão no Noroeste Americano

[**Palavras-chave:** Conflito ambiental, estudos da ciência, produção de lugar, agricultura, americanos nativos]

部落科学与农民的抵抗：美国西北部地区鲑鱼栖息地复育的政治生态学

[**关键词：**环境冲突，科学研究，地景建构，农业，北美原住民]

Племенная наука и сопротивление фермеров: политическая экология реставрации ареалов лосося в американском северо-западе.

[**Ключевые слова:** экологический конфликт, научные исследования, занятие местности (place-making), сельское хозяйство, коренное население Америки]

علوم القبلية ومقاومة المزارعين: بيئة مُسَيَّسة لإحياء موطن سمك السلمون في شمال غرب أمريكا
كلمات البحث: الصراع البيئي، دراسات علمية، صناعة المكان، الزراعة، سكان أمريكا الأصليين